NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

Bedding

(Acre)

Code 310

DEFINITION

Plowing, blading or otherwise elevating the surface of flat land into a series of broad, low ridges separated by shallow, parallel channels.

PURPOSES

To provide improved surface drainage at relatively low cost by establishing adjoining parallel beds or land running in the direction of the available natural slope. This is accomplished by moving soil toward the center of beds to form a series of low ridges and shallow parallel channels that will minimize water pondage, provide gradients for removing runoff, permit efficient operation of tillage and harvesting equipment, or eliminate sources for mosquito production.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to poorly drained areas of flat to nearly flat land usually having slowly permeable soils. It is generally applicable where land use does not warrant more intensive drainage. Soils must be of sufficient depth to provide a satisfactory root zone after bedding.

CRITERIA

Bedding shall run in the direction of the available land slope without causing harmful erosion. Bedding is usually established without detailed engineering surveys. Beds shall be shaped and cross-row ditches provided where required to provide free movement of water from the crown to the parallel channels. Crowns shall provide a cross slope of not less than 0.3 percent.

Crown height, width and maximum length of beds shall be determined on the basis of site conditions.

Parallel channels may be shallow and side slopes steep or flat, based on the depth of the soil, crops grown, and local construction and maintenance methods. Parallel channels shall be graded toward an outlet.

An outlet, natural or constructed, must have sufficient capacity and depth to provide for removal of water from the parallel channels.

The width of beds (distance between parallel channels) must be varied with the permeability of the soil and slope of the land. Bed widths for row crops shall vary from approximately 30 feet on relatively flat, very slow permeable soils to approximately 80 feet on 1% moderately slow permeable soils. This width may be increased for permanent pasture, hay and grain crops. Bed widths should be adjusted to conform to the width of crop rows and farm machinery commonly used by the landowner.

A fall of at least 0.75-foot shall be provided from the center (crown) of the bed to the bottom of the parallel channel.

Indiana NRCS FOTG - June 1989.

Collection (surface field) ditches shall be provided for outlets to the parallel channels.

Collection ditches shall be spaced not more than 300 feet apart on very slowly permeable soils having slopes of 0.1% or less, not more that 1,000 feet apart on moderately slowly permeable soils having slopes of approximately 1%.

Where collection ditches are located at the ends of fields, a turn strip at least 30 feet wide shall be provided between the ditch and field boundary.

The collection ditch shall be large enough to provide the degree of drainage required and shall have a minimum depth of 9 inches with side slopes of 8:1, and with a minimum grade of 0.02%.

CONSIDERATIONS

Effects on water quantity and quality shall be considered. This practice may increase the rate and amount of surface runoff and may decrease the amount of infiltration and deep percolation to the ground water. Peak discharge downstream may increase. Runoff can be either increased or decreased depending on the system and local conditions.

This practice improves surface drainage, reduces water ponding, and improves gradients for the removal of surface runoff. These improvements in water removal may enable the runoff to transport detached and dissolved substances to the receiving waters. Improved drainage may decrease denitrification and may increase crop production on the beds. This may enable the growing crop to utilize the plant nutrients more efficiently, thereby reducing the amount of nutrients percolated into the ground water or delivered to surface water. This practice applies to soils with low percolation rates and may have a slight effect on the quality of ground water. Nutrient application can be confined to the beds, resulting in a reduction of chemical movement.

Water Quantity

1. Effects on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.

2. Potential for a change in rates of plant growth and transpiration because of changes in the volume of soil water.

3. Effects on downstream flows or aquifers that would affect other water uses or users.

4. Effects on the relation of the soil surface to the water table to ensure a suitable rooting depth for crops.

Water Quality

1. Effects on erosion and the movement of sediment and soluble and sediment-attached substances carried by runoff.

2. Effects on the use and management of nutrients and pesticides and their effect on surface and ground water quality.

3. Effects on the movement of dissolved substances below the root zone and to ground water.

4. Effects of water levels on soil processes such as nutrient use by the plant.

5. Effects on wetlands or water-related wildlife habitats.

6. Effects on the visual quality of downstream water.

Special attention shall be given to maintaining and improving visual resources and habitat for wildlife where applicable. The landowner/user will be advised if wetlands will be affected and USDA-NRCS wetland policy will apply.

PLANS AND SPECIFICATIONS

All trees, brush, stones or other objectionable material shall be disposed so that they will not interfere with the construction, operation or maintenance of the bedding system.

All earth removed in the process of establishing the parallel channels and collection ditches shall

be spread or disposed so it will not impede surface drainage from the crown of the bed to the parallel channel.

Minor deviations in grade not affecting the functioning of the system may be permitted.

The bed shall be crowned so that there is a uniform slope from the center of the bed to the edge of the parallel channel.

Parallel channel and collection ditches shall be constructed on a continuous grade with no obstructions and low points that would interfere with the removal of surface water.

OPERATION AND MAINTENANCE